REMARKS

This communication is in response to the Office Action mailed on January 19, 2001. In the Office Action, claims 1-20 were pending. In addition, claims 1-16 were rejected and claims 17-20 were subject to the restriction or election requirement. With this amendment, applicants hereby cancels claims 17-20 and affirm the election to prosecute claims 1-16.

The Office Action first reports that the title of the invention is not descriptive. Although applicants submit that the original title of the invention is descriptive and meets the requirements of 37 CFR 1.72(a), the title has been amended.

The Office Action next reports that the drawings are objected to because box 16 in Figs. 1, 7, 8, 9 and 10 require descriptive legends. Descriptive legends may be required where necessary for understanding of the drawing (37 CFR 1.84(o)). Applicants submit that sensor 16 does not need a descriptive legend for understanding of the drawing particularly since sensor 16 is shown. Applicants believe that the drawings are suitable without sensor 16 having a descriptive legend. Accordingly, withdrawal of the objection is requested.

The Office Action also reports objections to the Specification. With this amendment, applicants have inserted spaces before section headings. Applicants also note that the original Specification was submitted with lines 1.5 spacing. Accordingly, no substitute Specification is believed necessary.

The Office Action next reports that claims 1, 3, 4, 8-10, 12 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. (U.S. Pat. No. 5,431,134) in view of Richeson, Jr. et al. (U.S. Pat. No. 4,109,630). At this point, applicants note that the Office Action states "Budde et al. disclose the essential elements of the claimed invention." Applicants are unclear as to which elements are "essential" and which elements are not essential. Clarification of this statement is requested.

Independent claim 1 recites an ignition timing device for timing an engine. The ignition timing device has a variable reluctance sensor providing a timing mark signal indicative of presence of a timing mark of the engine proximate the variable reluctance sensor. In addition, the ignition timing device includes an ignition sensor adapted to provide an ignition signal indicative of the current provided for an ignition spark. Furthermore, claim 1 recites a comparator that receives both the timing mark signal and the ignition signal and provides an output signal indicative of substantial simultaneous occurrences of the timing mark signal and the ignition signal. Finally, an indicator receives the output signal and operates as a function of the output signal. Independent claim 12 recites a method for timing an engine using similar elements to independent claim 1. Applicants submit that features of claims 1 and 12 are neither taught nor suggested by the combination of Budde et al. and Richeson, Jr. et al.

Budde et al. describe an ignition timing device including a sensor and an ignition sensor. However, Budde et al. do not teach or suggest using a comparator to compare the signals from the sensor and the ignition sensor nor does Budde et al. disclose a variable reluctance sensor. Richeson, Jr. et al. describe a comparator and a variable reluctance sensor. However, applicants submit that there is no teaching or suggestion to combine these references. In fact, Budde et al. includes statements that teach away from independent claims 1 and 12. For example, col. 2, line 66 to col. 2, line 23 disclose that a variable reluctance sensor would not work on older engines without an indicator attached to the flywheel and that owners would not want to incur the time and expense. Prior art references must be considered in their entirety including portions that would lead away from the claimed invention. See MPEP 2141.02. Clearly, Budde et al. teach that using a variable reluctance sensor would change the principle operation of Budde

et al. In addition, Budde et al. provide no suggestion or motivation for using a comparator. Furthermore, Richeson, Jr. et al. fails to teach comparing dynamic signals as recited in claims 1 and 12. Richeson, Jr. et al. teach comparing a predetermined value of a reference inductor and a sensor inductor (col. 7, lines 34-42). Thus, one skilled in the art would not be motivated to combine Budde et al. and Richeson, Jr. et al. to develop the present invention since the references teach away from the claimed invention. Accordingly, applicants submit that independent claims 1 and 12 are allowable over the prior art.

As further support for the unobviousness of the present invention, applicants hereby also submit a copy of an article in Hot Bike, June 2001 issue (which actually was available on or about May 1, 2001) that reviews an embodiment of applicants' invention. The article demonstrates the long felt need for the "Time Keeper" ignition timing device, which is an embodiment of the features recited in claims 1 and 12. Applicants also note that this article was an independent review of the Time Keeper device. Since this article published, sales of Time Keeper ignition timing device have exceeded 100.

With regard to dependent claims 3, 4, 8-10 and 14, these claims all recite further features of the invention when combined with their respective independent claims. In particular, these claims recite further patentable features that are also neither taught nor suggested by the prior art.

For example, claims 3 and 14 recite means for filtering ignition sparks of compression strokes from ignition sparks of compression and exhaust strokes of a selected cylinder. The means for filtering in claims 3 and 14 are also included in the embodiment reviewed by Hot Bike magazine. The Office Action reports that Richeson, Jr. et al. disclose means for filtering. However, the filtering in Richeson, Jr. et al. is simply not what is recited in claims 3 and 14. The filtering means of Richeson, Jr. et al. filter rotational positions of cylinders and not the

ignition sparks of compression strokes and ignition sparks of compression and exhaust strokes of a selected cylinder (col. 4, lines 33-55). In an obvious determination, the claimed invention as a whole must be considered. Thus, the filtering means of Richeson, Jr. et al. must teach the features of claims 3 and 14 in order to render claims 3 and 14 obvious. Here, that is simply not the case. The means for filtering of the present invention are distinct and advantageous over the filtering taught by Richeson, Jr. et al. The means for filtering of the present invention provide a way to compare only a compression stroke with a sensor output. This is simply not taught or suggested by Budde et al. and Richeson, Jr. et al. Accordingly, claims 3 and 14 are believed to be allowable over the prior art.

The Office Action next reports that claims 2 and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. in view of Richeson, Jr. et al. and further in view of Luteran (U.S. Pat. No. 4,109,630). In addition, claims 5-7, 15 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. in view of Richeson, Jr. et al. and further in view of Dickmeyer et al. (U.S. Pat. No. 5,998,988). Finally, claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Budde et al. in view of Richeson, Jr. et al. and further in view of Berardinelli (U.S. Pat. No. 5,814,723). With regard to these claims, these claims recite further features of the present invention when combined with their respective independent claims. As such, these claims are believed to be separately patentable and allowable over the prior art.

In view of the foregoing, applicants respectfully request reconsideration and allowance of claims 1-16. In addition, withdrawal of the objections to the drawings is requested. Favorable action is solicited.

An extension of time fee is enclosed herewith for consideration of the amendment.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: _____

Steven M. Koehler, Reg. No. 36,188
Suite 1600 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

SMK:jmb

MARKED-UP VERSION OF REPLACEMENT CLAIMS

1. (Amended) An ignition timing device for timing an engine having a timing port, the ignition timing device comprising:

a sensor securable in the timing port to provide a timing mark signal indicative of presence of a timing mark of the engine proximate ~~the~~ a variable reluctance sensor;

an ignition sensor adapted to provide an ignition signal indicative of the occurrence of an ignition spark;

a comparator receiving the timing mark signal and the ignition signal, the comparator providing an output signal indicative of substantial simultaneous occurrence of the timing mark signal and the ignition signal; and

an indicator receiving the output signal and operable as a function thereof.